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EXAMINER	
LAZARO, DAVID R	

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/732,329	SHETH ET AL.	
	Examiner	Art Unit	
	David Lazaro	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the RCE filed 12/27/04.

2. Claims 1-19 are pending in this Office Action.

Response to RCE

3. Applicant's arguments filed 12/27/04 have been fully considered but they are not persuasive.

4. This is a continuation of applicant's earlier Application No. 09/732,329. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, THIS ACTION IS MADE FINAL even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Claim Rejections - 35 USC § 102

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-5, 7-10, 12-15 and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,275,861 Chaudri et al. (Chaudri).

7. With respect to Claim 1, Chaudri teaches a method, comprising: identifying a combination of fields in a header (Col. 2 lines 55-58 and Col. 8 lines 4-7) of an internet protocol (hereinafter IP) packet (Col. 2 lines 10-12), wherein the combination is

dynamically modifiable (Col. 4 lines 58-64 and Col. 6 lines 45-49); and utilizing the combination of fields to classify the IP packet (Col. 4 lines 45-47 and Col. 6 lines 22-63).

8. With respect to Claim 2, Chaudri teaches all the limitations of Claim 1 and further teaches a. constructing a key (Col. 5 lines 1-4) according to information in a key construction register (Col. 6 lines 41-49); b. identifying a tag that corresponds to the key from a table of key-tag entries in a memory device (Col. 6 lines 50-63); and c. inserting the tag in the header of IP packet in accordance to information in a tag insertion register (Col. 7 lines 1-5 and lines 14-18).

9. With respect to Claim 3, Chaudri teaches all the limitations of Claim 2 and further teaches the information in the key construction register indicates a retrieval location in the header of IP packet (Col. 4 lines 65-67) and a number of bits from the retrieval location (Col. 4 lines 58-64) to consider in constructing the key (Col. 5 lines 1-3 and Col. 6 lines 41-49).

10. With respect to Claim 4, Chaudri teaches all the limitations of Claim 2 and further teaches the information in the tag insertion register indicates a number of bits to retrieve from the tag (Col. 7 lines 17-18 and Col. 6 line 43) and an insertion location in the header of IP packet to insert the tag (Col. 6 line 44).

11. With respect to Claim 5, Chaudri teaches a broadband engine (Fig. 6) , comprising: a. a transceiver module (Fig. 7, interface between 101 and 104); and b. a lookup module (Fig. 6, 111), coupled to an external processor via an external processor interface (Fig. 6, 104), an external content adjustable memory (Fig. 6, 110) and the transceiver module, further including: a processing core (Fig. 7, 112) to classify an

internet protocol (hereinafter IP) packet (Col. 2 lines 10-12) by utilizing a dynamically modifiable (Col. 4 lines 58-64 and Col. 6 lines 45-49) combination of fields in a header of the IP packet (Col. 2 lines 55-58 and Col. 8 lines 4-7).

12. With respect to Claim 7, Chaudri teaches all the limitations of Claim 5 and further teaches the lookup module further comprising: a. a plurality of registers to contain key construction information and tag insertion information from the external processor (Col. 6 lines 39-49); and b. the processing core to construct a key according to the key construction information (Col. 5 lines 1-4), retrieve a tag that corresponds to the key from the external content adjustable memory (Col. 6 lines 50-62) and insert the tag in a header of one of the packets based on the tag insertion information (Col. 7 lines 1-5 and lines 14-18).

13. With respect to Claim 8, Chaudri teaches all the limitations of Claim 7 and further teaches the key construction information further comprises: a retrieval location in the header of IP packet (Col. 4 lines 65-67) and a number of bits from the retrieval location (Col. 4 lines 58-64) to consider in constructing the key (Col. 5 lines 1-3 and Col. 6 lines 41-49).

14. With respect to Claim 9, Chaudri teaches all the limitations of Claim 7 and further teaches the tag insertion information further comprises: a number of bits to retrieve from the tag (Col. 7 lines 17-18 and Col. 6 line 43) and an insertion location in the header of IP packet to insert the tag (Col. 6 line 44).

15. With respect to Claim 10, Chaudri teaches a line card (Fig. 7, 100), comprising: an input/output interface (Fig. 7, any Port); a switch fabric interface to communicate with

a switch fabric (Fig. 7, 130); and a broadband engine (Fig 6), coupled to the input/output interface and the switch fabric interface, further including: a. a transceiver module to receive a plurality of packets from the input/output interface (Fig. 7, interface between 101 and 104); and b. a lookup module (Fig. 6, 111), coupled to an external content adjustable memory (Fig. 6 110), the transceiver module and an external processor (Fig. 6 104), further including: a processing core (Fig. 7, 112) to classify an internet protocol (hereinafter IP) packet (Col. 2 lines 10-12) by utilizing a dynamically modifiable combination of fields in a header of the IP packet packet (Col. 4 lines 45-47 and lines 58-67, and Col. 6 lines 22-63).

16. With respect to Claim 12, Chaudri teaches all the limitations of Claim 10 and further teaches the lookup module further comprising: a. a plurality of registers to contain key construction information and tag insertion information from the external processor (Col. 6 lines 39-49); and b. the processing core to construct a key according to the key construction information (Col. 5 lines 1-4), retrieve a tag that corresponds to the key from the external content adjustable memory (Col. 6 lines 50-62) and insert the tag in a header of one of the packets based on the tag insertion information (Col. 7 lines 1-5 and lines 14-18).

17. With respect to Claim 13, Chaudri teaches all the limitations of Claim 12 and further teaches the key construction information further comprises: a retrieval location in the header of IP packet (Col. 4 lines 65-67) and a number of bits from the retrieval location (Col. 4 lines 58-64) to consider in constructing the key (Col. 5 lines 1-3 and Col. 6 lines 41-49).

18. With respect to Claim 14, Chaudri teaches all the limitations of Claim 12 and further teaches the tag insertion information further comprises: a number of bits to retrieve from the tag (Col. 7 lines 17-18 and Col. 6 line 43) and an insertion location in the header of IP packet to insert the tag (Col. 6 line 44).

19. With respect to Claim 15, Chaudri teaches a communication system (Col. 1 lines 19-20), comprising: a. a switch fabric (Fig. 7, 130); b. a main processing engine with an processor (Fig. 7, 104); and c. a line card, coupled to the switch fabric via a switch fabric interface (Fig.7, 130), further including: an input/output interface (Fig. 7, Ports 1-4); a broadband engine (Fig. 6), coupled to the input/output interface and the switch fabric interface, further comprising: i. a transceiver module to receive a plurality of packets from the input/output interface (Fig. 7, interface between 101 and 104); and ii. a lookup module (Fig. 6, 111), coupled to an external content adjustable memory (Fig.6, 110), the transceiver module and the processor, further including: a processing core (Fig. 7, 112) to classify an internet protocol (hereinafter IP) packet (Col. 2 lines 10-12) by utilizing a dynamically modifiable (Col. 4 lines 58-64 and Col. 6 lines 45-49) combination of fields in a header of the IP packet (Col. 2 lines 55-58 and Col. 8 lines 4-7).

20. With respect to Claim 17, Chaudri teaches all the limitations of Claim 15 and further teaches the lookup module further comprising: a. a plurality of registers to contain key construction information and tag insertion information from an external central processing unit (Col. 6 lines 39-49); and b. the processing core to construct a key according to the key construction information (Col. 5 lines 1-4), retrieve a tag that

corresponds to the key from the external content adjustable memory (Col. 6 lines 50-62) and insert the tag in a header of one of the packets based on the tag insertion information (Col. 7 lines 1-5 and lines 14-18).

21. With respect to Claim 18, Chaudri teaches all the limitations of Claim 17 and further teaches the key construction information further comprises: a retrieval location in the header of IP packet (Col. 4 lines 65-67) and a number of bits from the retrieval location (Col. 4 lines 58-64) to consider in constructing the key (Col. 5 lines 1-3 and Col. 6 lines 41-49).

22. With respect to Claim 19, Chaudri teaches all the limitations of Claim 17 and further teaches the tag insertion information further comprises: a number of bits to retrieve from the tag (Col. 7 lines 17-18 and Col. 6 line 43) and an insertion location in the header of IP packet to insert the tag (Col. 6 line 44).

Claim Rejections - 35 USC § 103

23. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

24. Claim 6, 11, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudri in view of U.S. Patent 6,611,875 by Chopra et al. (Chopra).

25. With respect to Claim 6, Chaudri teaches all the limitations of Claim 5 and further teaches the transceiver module further collections a portion of incoming packets (Col. 5 line 9-11). Chaudri does not explicitly disclose the transceiver appends control information. Chopra teaches a transceiver module that appends control information to a

collected portion of an incoming packet (Col 8 lines 41-48 and lines 58-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to take the engine disclosed by Chaudri and modify it as indicated by Chopra such that the transceiver module further appends control information to the collected portion. One would be motivated to have this as it insures internal processing is controlled more efficiently (Col. 7 lines 55-67).

26. With respect to Claim 11, Chaudri teaches all the limitations of Claim 10 and further teaches the transceiver module further collections a portion of incoming packets (Col. 5 line 9-11). Chaudri does not explicitly disclose the transceiver appends control information. Chopra teaches a transceiver module that appends control information to a collected portion of an incoming packet (Col 8 lines 41-48 and lines 58-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to take the line card disclosed by Chaudri and modify it as indicated by Chopra such that the transceiver module further appends control information to the collected portion. One would be motivated to have this as it insures internal processing is controlled more efficiently (Col. 7 lines 55-67).

27. With respect to Claim 16, Chaudri teaches all the limitations of Claim 15 and further teaches the transceiver module further collections a portion of incoming packets (Col. 5 line 9-11). Chaudri does not explicitly disclose the transceiver appends control information. Chopra teaches a transceiver module that appends control information to a collected portion of an incoming packet (Col 8 lines 41-48 and lines 58-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made

to take the system disclosed by Chaudri and modify it as indicated by Chopra such that the transceiver module further appends control information to the collected portion. One would be motivated to have this as it insures internal processing is controlled more efficiently (Col. 7 lines 55-67).

Response to Arguments

28. Applicant's arguments filed 12/27/04 have been fully considered but they are not persuasive.

29. In general, the Applicants' argument are focused on the claim limitations found in each of the independent claims, 1, 5, 10 and 15. The claim limitations of concern are "wherein the combination is dynamically modifiable" (as from claim 1) and "by utilizing a dynamically modifiable combination of fields in a header of the IP packet" (as from claim 5). Applicants argue that the Chaudri reference does not disclose these limitations.

30. It is respectfully noted that the previous Remarks filed 06/21/04 contained similar arguments directed towards the same claim limitations. The Examiner responded fully to these remarks in the Final Rejection (mailed 09/24/04) with an interpretation of the claim language based both on the Applicants' specification and using the broadest reasonable interpretation. The Examiner further explained, in detail, how the teachings of the Chaudri reference are within the scope of the claim language based on the given interpretation.

31. In the current Remarks filed with the RCE (12/27/04), Applicants only provide conclusive statements in regards to the Examiner's response and how the claim

language is distinguished from the Chaudri reference. For example, on page 10 of the Remarks, Applicants state "*...Chaudri merely discloses that a search engine comprises registers that are alterable parameters of the search engine itself... A search engine comprising alterable registers is not the same as the combination is dynamically modifiable.*" The Applicants do not specifically point out why a search engine comprising alterable registers is not the same as 'the combination is dynamically modifiable'. Also on pages 10-11, Applicants state a disagreement with the Examiners interpretation and assertion given in the Final Rejection, but again, only provide a conclusive statement. Applicants state, "*Alterable parameters as taught by Chaudri merely refer to alterable parameters of a search engine so that a search routine may be customized. This is further supported in the abstract of Chaudri, which states, "Flexibility is achieved by allowing parameters of the search routine to be specified in memory which can be programmably altered." (Emphasis added). Therefore Chaudri fails to disclose each and every element of claim 1.*" While the Applicants state their opinion on the functionality of Chaudri based on the cited abstract of Chaudri, the Applicants do not specifically point out their interpretation of the citation and the significance of their interpretation in relation to the claim language. In other words, the Applicants do not specifically point out how the claim language (in this case, the argued claim limitations) is distinguished from the stated functionality of Chaudri. In general, Applicants do not give any specific details as to how the claim language is distinguished from the teachings of Chaudri as required by 37 CFR 1.111(b). Furthermore, Applicants do not

specifically point out and describe any errors in the Examiner's interpretation of both the claim language and of the teachings of Chaudri as required by 37 CFR 1.111(b).

32. For these reasons and based on the Examiner's interpretation of the claim language and of the Chaudri reference (See below), the Applicant's arguments are not persuasive.

33. The following is the Examiner's interpretation of the claim language and of the teachings of Chaudri with consideration given to both the Remarks filed 06/21/04 and the Remarks filed with the RCE (12/27/04).

34. In the Remarks filed 06/21/04, on page 13, Applicants derive the meaning of "dynamically modifiable from pages 5 and 6 of the Specification, which states,

> "*Also, this technique provides a mechanism to dynamically modify the class information and the fields in IPv4 packet header used to convey such information. In other words, during normal operations of a network stack this technique allows a change from a first classification using a first combination of fields in IPv4 packet header to a second classification using a second combination of fields*" (Applicants' emphasis added).

35. While the MPEP 2106[R-2].II.C. states, "Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)", limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Taking this into consideration, the Examiner interprets the limitation 'the combination is dynamically modifiable" to generally mean

the combination of fields to be used in identifying/classifying can be changed for whatever reason. The same field or fields do not have to be used every time, and a change in the combination of fields allows for different classification processes. This interpretation is reasonable based on the Applicants cited meaning of "dynamically modifiable" given above. Furthermore, the Examiner interprets "dynamically modifiable" as capable of being programmed in order to have a different classification process. This is based on the last paragraph on page 12 of the Applicants' specification, which describes programming for a desired type of classification and states (emphasis added),

> *"More particularly, in conjunction with figures 2 and 4 and for illustration purposes, a processor in main processing engine 402 first programs CAM 220, the key construction and tag insertion registers with appropriate information representative of a first type of packet classification during the initialization of communication system 400. This first packet classification uses one field, or type of service field 106, to indicate different QOS treatment. Then assuming that main processing engine 402 decides to switch to a second type of packet classification, which utilizes both type of service field 106 and option/padding field 126, while in its steady state, processor of main processing engine 402 reprograms CAM 220, the key construction and tag insertion registers with a different set of information."*

36. Based on this interpretation, the examiner asserts the use of 'alterable registers' (also referred to as 'parameters') as taught by Chaudri would be within the scope of the limitations regarding the 'dynamic modification' of a combination of header fields. It is important to note that the search function/routine taught by Chaudri is part of a search engine that performs the classification process and makes use of 'alterable registers'

(Col. 6 lines 45-49 and Col. 3 lines 50-55). The 'alterable registers' of Chaudri include the 'offset' and 'mask' parameters. The offset and the mask determine the combination of fields of a packet to be used in determining the classification (Col. 4 lines 58-64). In other words, a first set of values for the offset and the mask would create a first classification, and a second set of values for the offset and the mask would create a second classification. This relates directly to what Applicants cited as the meaning of "dynamically modifiable", i.e.

> *"during normal operations of a network stack this technique allows a change from a first classification using a first combination of fields in IPv4 packet header to a second classification using a second combination of fields".*

37. Chaudri also teaches a packet being classified may be an IP packet (Col. 2 lines 10-12). As such, Chaudri teaches a dynamically modifiable combination of fields of an IP packet. However, Chaudri provides further evidence that the combination of fields is 'dynamically modifiable'.

38. Chaudri also identifies the parameters/registers as 'alterable' (Col. 6 lines 45-49). The word alterable itself means capable of being changed or modified. This means the combination of fields can be changed in the system taught by Chaudri. Based on that common meaning alone, it would be reasonable to interpret 'alterable registers', which include a combination of fields based on the 'offset' and 'mask parameters', as being 'dynamically modifiable'. Therefore, Chaudri teaches "wherein the combination is dynamically modifiable" and "a dynamically modifiable combination of fields." However,

Chaudri provides further evidence that the combination of fields is dynamically modifiable.

39. For instance, in Col. 6 lines 18-21, Chaudri states that the invention allows the classification process to be "programmably configurable through setting data in the search memory and in the FLOW_ID data structure". The configurable data includes the data found in the 'alterable registers', which includes the combination of fields to be used (Col. 6 lines 39-44 and Col. 4 lines 58-64). As the registers are "programmably configurable", they can be considered "dynamically modifiable" based on the given interpretation in regards to Page 12 of Applicants' specification (cited above) which describes programming for a desired type of classification. This allows different classification processes to be configured based on different combinations of fields as a packet is classified (Col. 6 lines 39-62 and Col. 5 lines 9-23). In fact, one of the primary motivations for the invention of Chaudri is to allow "the operation of the routing function and flow assignment [to] be specified and configured programmably so that it can be easily changed and can flexibly respond to different requirements of different network protocol layers" (Col. 3 lines 35-43). Chaudri recognized the need for not only different classification processes, but also the ability to "easily change" between different classification processes. This relates directly to what Applicants cited as the meaning of "dynamically modifiable", i.e.

> *"during normal operations of a network stack this technique allows a change from a first classification using a first combination of fields in IPv4 packet header to a second classification using a second combination of fields".*

40. The "different requirements of different network protocol layers" as cited by Chaudri is a directly related to "normal operations of a network stack" as cited by Applicants. And as explained already, Chaudri technique allows for different classification processes, such as a change from a first classification to a second classification.

41. Therefore, based on the Examiner's interpretation of the claim language and of the Chaudri reference, Chaudri teachings are within the scope of the limitations "wherein the combination is dynamically modifiable" and "by utilizing a dynamically modifiable combination of fields in a header of the IP packet".

Conclusion

42. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

43. U.S. 6,341,130 by Lakshman et al. "Packet Classification method and apparatus employing two fields" January 22, 2002. Discloses general concept for filter rules in classification, which can be implemented using any combination of packet field information.

44. U.S. 6,598,034 by Kloth "Rule based IP data processing" July 22, 2003. Discloses rules for classifying packets that can be compiled and applied in real-time through just-in-time compiling.

45. This is a continuation of applicant's earlier Application No. 09/732329. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lazaro whose telephone number is 571-272-3986. The examiner can normally be reached on 8:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lazaro
January 18, 2005

BHARAT BAROT
PRIMARY EXAMINER